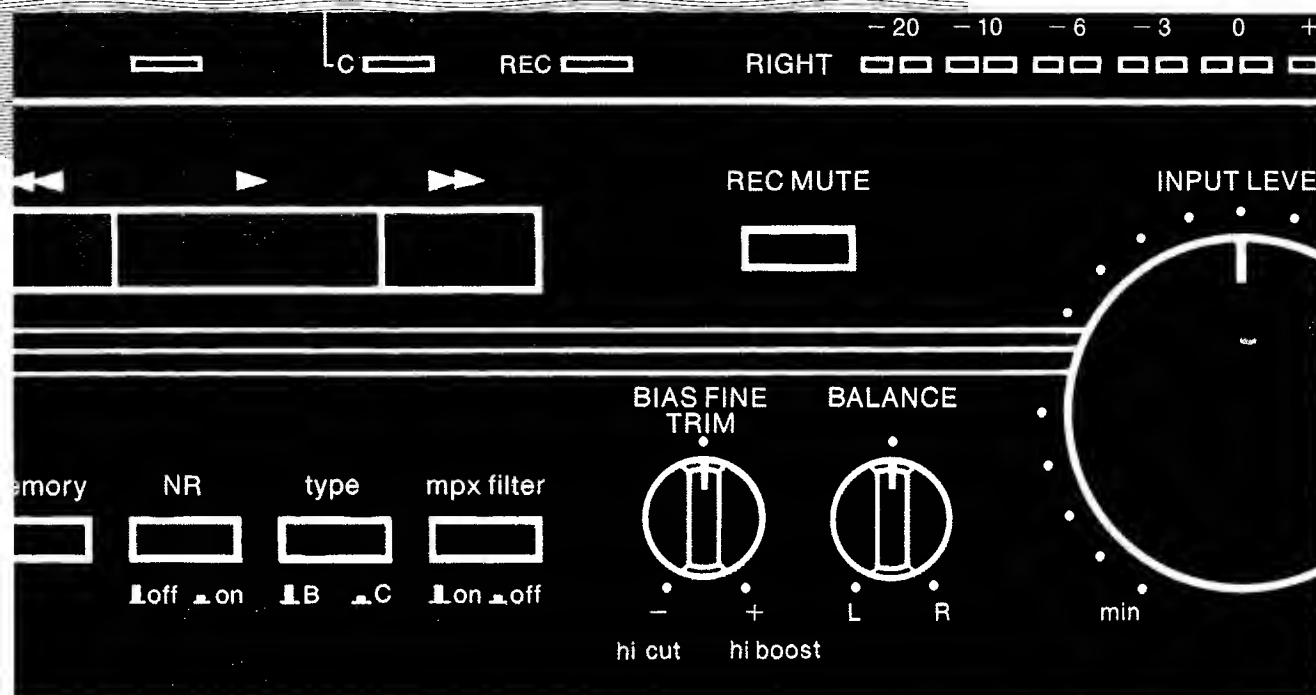


TD262

TD212



*Ultrawideband Linear Phase Cassette Deck      Instruction Manual*

*Magnétocassette à phase linéaire et bande ultralarge      Manuel d'utilisation*

*Ultrabreitband Phasenlineare Kassettendecks      Bedienungsanleitung*

*Piastra a cassette a banda ultra ampia e fase lineare      Manuale di istruzioni*

*Bredbands kassettdäck med linjär fas      Bruksanvisning*

*Ultrabreedband Lineaire Fase Cassettendecks      Handleiding voor de Eigenaar*

**harman/kardon**

# S a f e t y   P r e c a u t i o n s



CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

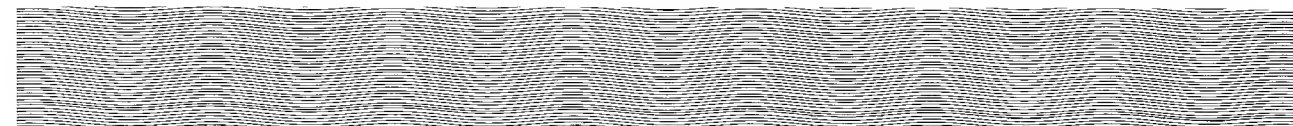


The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.



1. Read instructions — all safety and operation instructions should be read before using the cassette deck.
2. Retain instructions for future reference.
3. Heed warnings — all warnings on the cassette deck and in its operations instructions should be adhered to.
4. Follow all instructions.
5. Water and moisture — do not use the cassette deck around water, for example near a swimming pool, sink or in a wet basement.
6. Ventilation — The cassette deck should be situated so that its location or position does not interfere with its proper ventilation.
7. Heat — The cassette deck should be situated away from heat sources such as radiators, fireplaces, stoves, electric popcorn poppers or other appliances that produce heat. Also avoid prolonged contact with direct sunlight and extremely low temperatures.

8. Always use the correct AC voltage — Always connect the power cord to a domestic mains outlet. Never connect the unit to an outlet supplying a higher voltage. This may create a fire hazard.

## NOTE FOR CUSTOMERS OTHER THAN CANADA

This unit is supplied with a voltage selector enabling selection between 220V and 240V on the rear panel. If the selector is not set to the local voltage, set the selector to the correct voltage with a screwdriver before connecting the power cord to a mains outlet.

9. Power cord protection — Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles and the point at which the cord exits from the cassette deck. Also never pull or stretch the cord.
10. Cleaning — Do not use volatile solvents such as alcohol, gasoline, benzine etc. to clean the cassette deck cabinet. Use only a clean dry cloth. If you must use a wet cloth, wet only the cloth lightly with water.
11. Object and liquid entry — Care should be taken so that objects (including excessive dust) do not fall into the unit, and that liquids are not spilled into the inside of the cassette deck.

- 12.** Abnormal smells — If abnormal smell or smoke is detected, immediately turn the cassette deck power OFF and pull out the power cord. Contact your dealer or nearest Harman Kardon Service station.
- 13.** Damage requiring service —The cassette deck should be serviced by qualified service personnel when:
- A.** The power supply cord or the plug have been damaged; or
  - B.** Objects have fallen, or liquid has been spilled into the cassette deck; or
  - C.** The cassette deck has been exposed to rain; or
  - D.** The cassette deck does not appear to operate normally in performance; or
  - E.** The cassette deck has been dropped or the cabinet damaged.
- 14.** Servicing — The user should not attempt to service the cassette deck beyond those means described in this manual. All other servicing should be referred to qualified service personnel.

#### FOR CUSTOMERS IN THE UK

Your unit is supplied with the flex which will have either two or three wires, so the following items should be observed to guarantee safety:

##### THREE CORE FLEX

**WARNING: THIS APPARATUS MUST BE EARTHED.**

**IMPORTANT.** The wires in this mains lead are coloured in accordance with the following code:

Green-and-yellow	: Earth
Blue	: Neutral
Brown	: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⚡ or coloured green or green-and-yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

#### TWO CORE FLEX

**IMPORTANT.** The wires in this mains lead are coloured in accordance with the following code:

Blue	: Neutral
Brown	: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

#### FOR CUSTOMERS IN CANADA

The AC plug is a polarized plug, so the following item should be taken into consideration.

**CAUTION: TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.**

## TD262 / TD212 Controls

Thank you for choosing Harman Kardon.

You now own a superb piece of high fidelity equipment. Used properly, you are about to begin thousands of hours of cassette recording and playback enjoyment.

While you are probably no beginner when it comes to high fidelity components, we nevertheless ask you to read and carefully follow the instructions in this manual to insure a successful partnership between you and your new Harman Kardon Ultrawideband Cassette Deck.

Actual hook-up instructions begin on page 7.

NOTE: The TD262 includes several additional features not found on the TD212. These features are noted in the panel description and operating instructions. For example:

### 13. Rec Mute (TD262 only)

The following is a short explanation of the operating controls and features on the front panel of your Harman Kardon cassette deck.

### 1. Eject

To load a cassette tape, press the **EJECT (1)** button and the tape compartment door will open. Press inward on the cassette tape compartment door to close it.

### 2-3. Tape Counter/Reset

The tape counter (2) allows you to locate a particular place on a cassette. Press the **RESET (3)** button to set the counter to 000.

### 4-8. Indicators

Next to the red **POWER (4)** indicator are green and amber LED's to show whether **DOLBY B (5)** or **DOLBY C (6)** noise reduction circuits are on. Other red and green LED's are used to display **RECORD (7)** and **PLAY (8)** modes.

### 9. Peak Meter Display

A series of green and red LED's (9) are used to register right and left recording input levels as well as playback levels. This display reacts almost instantly to musical peaks and provides more useful information than mechanical meters.

### 10. Input Level

This large rotary knob (10) is used to control input levels to the TD262 / TD212 during recording.

### 11. Balance Control

Some recording sources, particularly phonograph records and FM stations, often provide slightly more input to one channel than the other. When the Peak Level Display indicates a constant imbalance between left and right channels, the **BALANCE CONTROL (11)** may be used to correct the problem.

### 12. Bias Fine Trim

This is an especially useful feature of your new Harman Kardon cassette deck. Although the **BIAS/EQUALIZATION** switches (19-21) provide the proper bias setting for three main types of cassette tapes, brand and formulation of cassette tape still requires a slightly different bias adjustment for maximum wide band performance. Using the **BIAS FINE TRIM (12)** and step-by-step instructions farther on in this manual, you can fine tune the TD262/TD212 exactly to the tape you are using.

The **BIAS FINE TRIM** control has no effect during playback.

### 13. Rec Mute (TD262 only)

This button allows you to automatically insert a blank space while recording a tape. Simply press **REC MUTE (13)** for as long as you wish the blank space to last. When you release it, recording will continue.

### 14-18. Transport Controls

Press ■ (14) to stop the cassette deck's tape transport while in any mode.

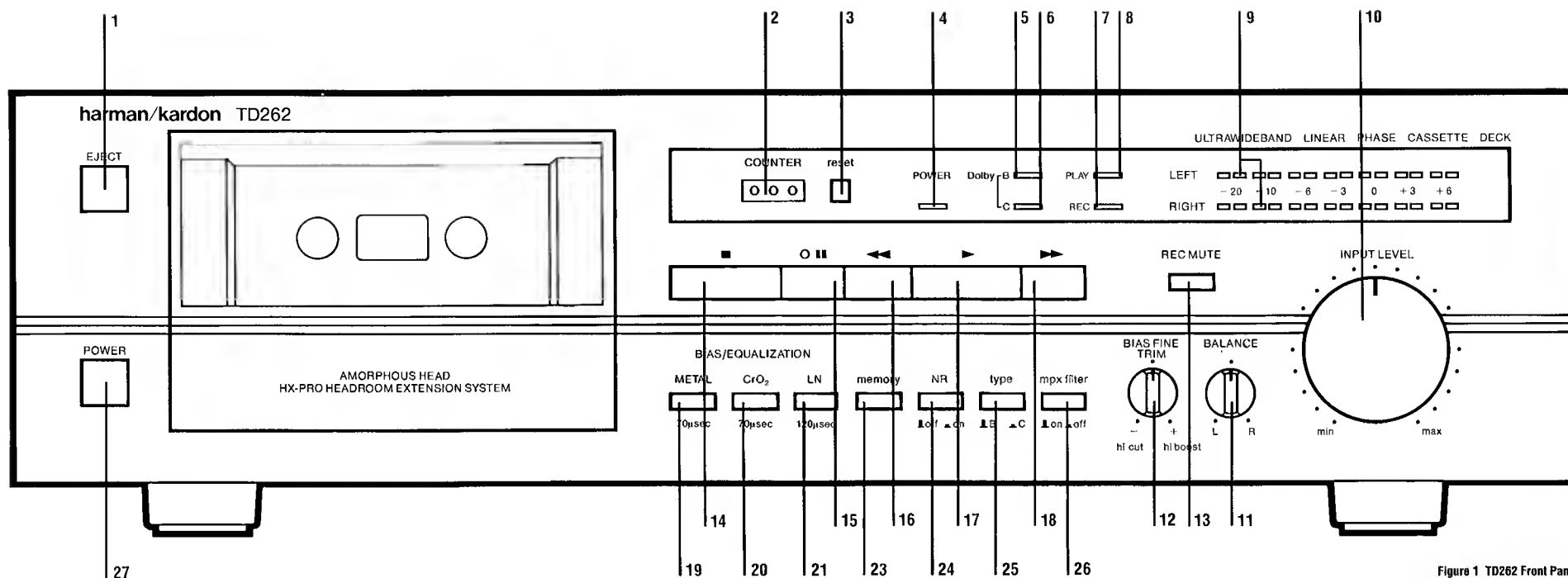


Figure 1 TD262 Front Panel

O II (15) is the TD262 / TD212's **RECORD/PAUSE** button. When it is pressed, the cassette deck switches to record mode, the REC indicator lit up and PLAY indicator blinks at the same time, and input to the deck is displayed on the Peak LED Indicators, but the tape does not advance. While in this mode, you can adjust the INPUT LEVEL and BALANCE controls before actual recording. You can also pause at any time during recording by pressing it once.

> (17) begins playback or recording.

<< (16) is used to quickly rewind the tape. To rapidly wind the tape *forward*, press >> (18). To stop **REWIND** or **FAST FORWARD**, press ■ .

### 19-21 Bias/Equalization

Three different types of cassette recording tapes may be used with the TD262 / TD212. Each of these tape formulations requires different electronic settings within the cassette deck.

**METAL (19)** should be used when recording metal formulation (Type IV) tapes. This type of tape, which affords the widest frequency response and lowest noise levels, will not record properly on any other setting.

**CrO<sub>2</sub> (20)** is for Type II tapes. These are often referred to as High Bias, 70µs or chrome tapes (CrO<sub>2</sub> is the chemical formula for chromium dioxide, one of the components originally used in Type II cassette tapes).

**LN (21)** should be pressed if you are using a Type I tape. These

are also referred to as Normal Position, Low Noise, ferric oxide or simply 120µs tapes.

If you are unsure as to which setting to use for a particular brand of cassette, consult the information packed with the tape or your Harman Kardon dealer.

### 23. Memory (TD262 only)

If you wish to return to a particular point on the tape, mark it by setting the tape counter to 000 at that point.

To return to the same point, depress the **MEMORY (23)** button and then press << . The TD262 will then automatically rewind, and stop at the point on the tape which corresponds to 000 on the tape counter.

## 24-25. Dolby Noise Reduction

Dolby noise reduction is an extremely effective method of reducing background hiss on tapes. The TD262 and TD212 incorporate both Dolby B and Dolby C circuitry. Dolby B reduces tape hiss by about 10dB. Dolby C is approximately

twice as effective as Dolby B, reduces noise over a wider frequency band and improves overall high-end tape response.

When pressed, the **NR (24)** button engages the Dolby B & C noise reduction systems.

The **TYPE (25)** switch selects the noise reduction system to be used for recording or playback.

NR BUTTON	TYPE BUTTON	RESULTS	COMMENTS
OFF	NO EFFECT	NR OFF	• For playback of tapes which have not been encoded with Dolby B or C NR <sup>1</sup> .
ON	OUT	DOLBY B	• For playback of tapes recorded with Dolby B <sup>2</sup> . • During recording, encodes the tape in Dolby B.
ON	IN	DOLBY C	• For playback of tapes recorded with Dolby C <sup>3</sup> . • During recording, encodes a tape in Dolby C.

1. A Dolby-encoded tape played back without noise reduction decoding will sound "bright" due to boosted treble frequencies.
2. A tape which has not been recorded with Dolby NR, will sound muffled and "dull" when played back with noise reduction decoding on.
3. Unsatisfactory sound will result if you attempt to play back a tape recorded in Dolby C while the TYPE button is set to Dolby B, and vice versa.

## 26. Mpx Filter

This circuit is an input filter which should only be used when making cassette recordings of FM broadcasts while employing Dolby B or C noise reduction. Special inaudible signals that are part of FM stereo broadcasts can interact with Dolby NR to cause *audible* interference and distortion which are noticeable only during playback after it is too late to correct.

Always set the **MPX FILTER (26)** button to its ON position when making Dolby-encoded recordings from FM. The circuit has no effect during playback.

## 27. Power

Press this switch to turn the power to your TD262 / TD 212 on. Press again to turn the power off.

## About Dolby HX Pro (TD262 only)

The Harman Kardon TD262 includes special Dolby HX Pro circuitry. This is NOT a noise reduction circuit. Nor is it a "record/playback" system which requires separate encode and decode circuits. Its purpose is to gain even more high frequency performance out to tapes you record.

Even though your TD262 may be set to the optimum bias for a tape (using the BIAS/EQUALIZATION and BIAS FINE TRIM controls), extremely high treble signal levels can still cause the bias to momentarily overload, causing audible signal degradation and distortion. Until Dolby HX Pro was developed, the only alternative was to reduce overall input signal levels, which potentially increases signal-to-noise ratios.

\*Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.

<sup>1</sup>"DOLBY", the double-D symbol  and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Dolby HX Pro eliminates this problem by monitoring the signal level and constantly adjusting the bias so that the deck is always recording optimally. Not only is signal quality significantly improved, but recording headroom is also dynamically extended. Bets of all, it requires no special playback circuitry, so you can make a tape with HX Pro and enjoy the benefits in your car, with a portable cassette player, or when playing the tape on a friend's cassette deck.

There is no button to turn on Dolby HX Pro. Because it is compatible with any cassette deck during playback, it operates automatically when you make a recording with the TD262.

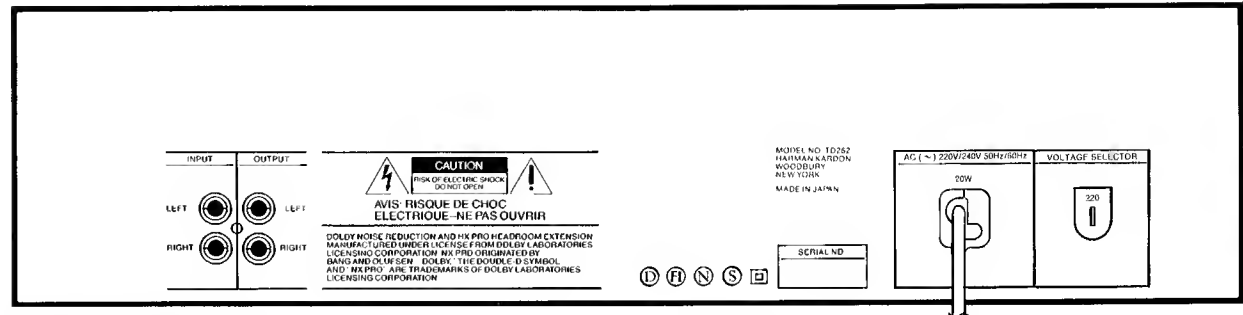


Figure 2 TD262 Rear Panel

### Packing and Paperwork

Save all packing material from your new Harman Kardon cassette deck. While the box is quite large and may be a nuisance to store, it is essential for shipping if you move or should the unit ever need repair.

Also be sure to fill out the customer profile card and save your sales receipt in a safe place. It is necessary to establish the date on which your warranty begins, and as proof of ownership in the event of something drastic such as fire or theft.

### Placement

The TD262 / TD212 is fully shielded and may be placed on top of or under other stereo components, provided that its 3/8 -inch "feet" provide sufficient clearance for the cooling needs of the component below.

### Hook-Up

The cassette deck's inputs and outputs are connected to the TAPE MONITOR connections of your preamplifier, integrated amplifier or receiver using the hook-up cables provided.

If you are using external signal processing components such as equalizers, dynamic expanders or surround sound processors which are now connected to your TAPE MONITOR loop, you have two choices.

If your pre-amp/integrated amp/receiver has two tape monitor loops and you do not wish your new cassette deck to interact with any components connected to TAPE MON. 1, connect the deck to TAPE MON. 2.

Connect the TD262 / TD 212 to the TAPE MON. loop provided on the last outboard component.

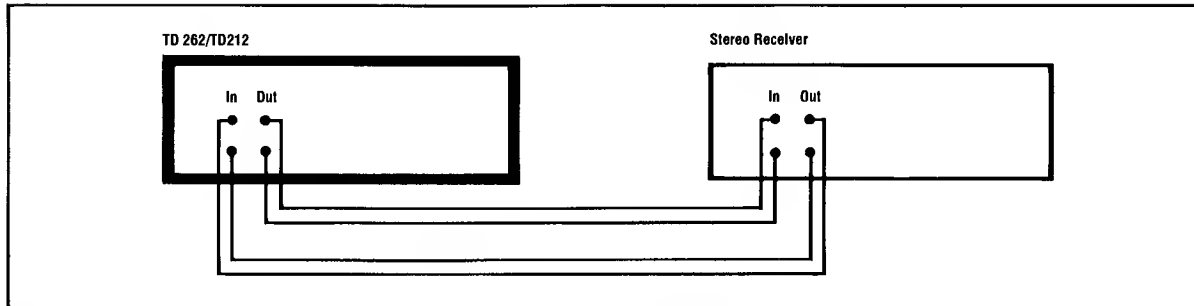


Figure 3

1. Make sure that power to both the TD262 / TD212 and your pre-amp/integrated amp/receiver is turned OFF.
2. Connect one set of hook-up cables from the TD262/ TD212's INPUT sockets to the appropriate TAPE MONITOR OUTPUT on your receiver/pre-amp/etc. It may be identified as REC or OUT, depending on the component.
3. Connect the other set of hook-up cables from the TD262 / TD212's OUTPUT sockets to the appropriate TAPE INPUT. This may be labeled IN, PLAY or MON.

During hook-up, take care to match left and right component plugs with the left and right input jacks on the cassette deck. Common practice is to treat the *red* plug as *right* and the *grey/black/white* plug as *left*.

## Power Connection

Upon completion of the audio connection, proceed with connection of the power cord into the appropriate outlet.

## Preparing the Tape

If tape is slack inside the cassette shell, it can cause jamming and possible destruction of the tape. Before playing or recording, insert a pencil into one of the cassette shell hubs and wind it until all the slack is taken up.

## Playing a Tape

1. Make sure the TD262 / TD212 is turned on.
2. Depress the EJECT button, insert the tape with the open side of the cassette shell downward and close the cassette compartment door.
3. Select the proper BIAS/ EQUALIZATION setting.
4. If the tape is encoded in Dolby B or C, use the NR and TYPE buttons to turn on the proper noise reduction circuits.
5. Press > .

## Recording a Tape

1. After loading a tape into the TD262 / TD212, set the BIAS/ EQUALIZATION, NR, and TYPE switches to their proper positions.
- 1A. Set the BIAS FINE TRIM to its center position (or refer to the next set of instructions on how to adjust bias to match a particular tape formulation.)
- 1B. If you are recording from FM, make sure to turn on the MPX FILTER.
2. Press **ON** (REC/PAUSE). The red REC indicator lit up and PLAY indicator blinks at the same time.
3. Play a section of the program to be recorded which is loud, i.e. has a wide dynamic range with ample bass and midrange.



4. Set the INPUT LEVEL knob until regular musical peaks register up to 0dB with *occasional* peaks registering as high as +3dB<sup>1</sup>.
5. Press > to begin recording.
6. During recording, watch the Peak Level Indicators to make sure that regular peaks do not exceed +3dB<sup>1</sup>.
  - To insert a momentary blank space, press REC MUTE (TD 262 only).
  - To pause during recording, press  $\square$  (REC/PAUSE). Press > (PLAY) to continue recording.
  - To stop recording, press  $\blacksquare$ .
1. When using metal tape formulations with Dolby C noise reduction, it is possible to record occasional musical peaks as high as +5dB. To determine if saturation distortion has occurred while recording at higher levels, reset the counter to 000 during recording, then later rewind the tape back to that point and play back that section.

### Adjusting Bias for Recording

This is a simple way to fine tune your cassette tape and deck. It uses interstation tape hiss as a test source. The BIAS FINE TRIM control is rotated in increments each time the Tape Counter advances 10 units. Then, when listening to playback, you can use the Tape Counter to determine which BIAS FINE TUNE position provided the best frequency response. Please note that the BIAS FINE TRIM control has less effect with metal tape than with LN or CrO<sub>2</sub> tapes.

1. Make sure that the NR button on the TD262 / TD212 is in the OUT position (off).
2. Select the proper BIAS/EQUALIZATION setting to match the tape type being used.
3. Rotate the BIAS FINE TRIM control as far as it will go to the left (hi cut). We will refer to this as the "7 o'clock" position, since it corresponds to that position on a clock face.

4. Set your receiver/pre-amp/integrated amp's SOURCE selector to TUNER.
5. Turn off any MUTE and SEEK features on your tuner (or tuning section of a receiver) and tune between stations until you hear only loud hiss (interstation noise).
6. After loading a blank cassette into the deck, press >> to advance toward the middle of the tape.
7. Press  $\blacksquare$  (STOP) and then  $\square$  (REC/PAUSE).
8. Set the INPUT level control until the Peak Level Meters read -3dB.
9. Reset the Tape Counter to 000.
10. Press > to begin recording.
11. When the Tape Counter reads 010, quickly rotate the BIAS FINE TRIM control clockwise to the "8 o'clock" position.
12. When the Tape Counter reads 020, rotate the BIAS FINE TRIM control to "9 o'clock".
13. Continue this operation until the Tape Counter reads 80 and the BIAS FINE TRIM knob has been rotated fully clockwise to the right as far as it will go (hi boost).
14. Press  $\blacksquare$  and rewind the tape back to the point where the tape counter reads 000.
15. Select TAPE MONITOR on your receiver/pre-amp/etc. Turn up the volume to a relatively high level or plug in a set of headphones and listen through them.
16. Press > on the TD262 / TD212.
17. While watching the Tape Counter, listen to the interstation FM hiss. At each 10 tape counter units, the treble quality of the hiss should change slightly. Compare it with "live" interstation noise by pressing the TAPE MONITOR button in and out. When the playback hiss and the "live" hiss sound very close to the same, note the numbers on the Tape Counter. These correspond to the BIAS FINE TRIM adjustment for the particular tape you are using.

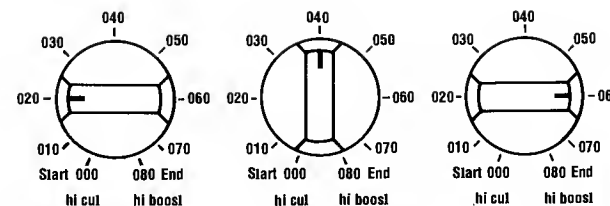


Figure 4 Adjusting Bias-Fine Trim

If you wish, you may repeat the test making adjustments just in close proximity to what seems to be the optimal setting. This can further fine tune bias adjustments, although past a certain point, minute changes will be hard to detect.

You should repeat this test again each time you change brands or formulations of cassette tape.

### Protecting Your Recordings

All cassettes are provided with an erasure protection system. It consists of two small tabs covering square holes on the back of the cassette shell. When these small plastic tabs are removed, it is impossible to re-record the cassette.

Thus you can protect a recorded tape from accidental erasure by prying these tabs off with a small screwdriver.

If you wish to use an erasure-protected cassette again for recording, simply cover the holes with adhesive tape.

After replacing a tape in its case, store it in a location well away from direct sunlight, high temperatures and excessive humidity.

Be especially careful to avoid placing a cassette tape near television sets or loudspeakers where magnetic fields may partially erase the tape.

Do not use old cassettes that no longer smoothly pass the tape from reel-to-reel. They may jam or otherwise provide unsatisfactory performance.

### Care of Your Harman Kardon Cassette Deck

**Tape heads and transport.** Even the smoothest high quality tape sheds particles onto the record and playback heads. This build-up eventually causes loss of sound quality and increased wear on tapes.

One option is to purchase a bottle of isopropyl alcohol and some long-handled cotton swabs. Slightly dampen a swab in alcohol and gently scrub the surfaces of each tape head. Then dampen another swab and clean other exposed internal mechanical parts which are close to the TD262 / TD212 tape heads. Repeat this process after every 30 tapes.

The other option is to purchase a commercial tape head cleaning kit which contains fluid and special cassettes with cleansing tape inside. Follow the instructions included on them and discard them when recommended.

Gradual magnetization of tape heads is another problem which can cause degradation of sound. Record heads are intended to impart a magnetic field, but not to be magnets in themselves. Likewise, a playback head is supposed to react to the magnetic field in a tape, but not to be magnetized itself. Unfortunately, both record and playback heads CAN and DO gradually pick up a residual magnetic field themselves. So does the capstan and other tape guide parts. The result of this gradual magnetization is that any tape pulled past a magnetized head picks up extra noise from the residual field and at the same time may be slightly erased! Not only will new tapes have poorer sound quality when recorded, but older tapes' sound quality can also be degraded.

The solution is a **tape head demagnetizer**. Two styles are available, handheld and cassette-sized. A handheld demagnetizer plugs into a wall socket and is much more effective since it

can generate a stronger de-magnetization field. However, it has to be used VERY carefully or it may do more harm than good. Before you invest in one, consult with your Harman Kardon dealer. Also read the instructions which come with the unit carefully and make sure no recorded tapes are anywhere near the demagnetizer when it is turned on.

A battery-powered demagnetizer in the shape of a cassette reduces the danger of improper use. You simply insert it and let it do its job. If you choose this type, make sure to use the cassette demagnetizer as frequently as is prescribed in the instructions which come with it.

**External Surfaces.** When cleaning your TD262 / TD212, avoid the direct use of dusting sprays, abrasive cleaners or caustics (such as dilute ammonia window cleaning solutions). Use only a mild soap and water solution, applied to a soft cloth, rather than sprayed directly onto the component.

Once again, thank you for choosing Harman Kardon. We wish you many happy years of cassette recording and playback listening enjoyment.

Checking these possibilities first may save you time and effort getting your unit serviced. Your Harman Kardon dealer will also be able to answer questions and help you discover the problem.

#### No light from any cassette deck indicators.

1. Deck is not plugged into wall socket.
2. Wall socket or extension cord is faulty. Check for poor connections and /or blown fuse.

#### No sound when PLAY is pressed.

1. The tape is at its end. Rewind it.
2. Sound is not recorded on the tape. You can determine this by checking the LED PEAK INDICATORS. They will flash if there is music recorded on the tape.
3. Other components in the signal chain such as preamplifier and power amplifier are not turned on.
4. The SOURCE and/or TAPE MONITOR selector on your pre-amp/integrated amp/receiver is switched incorrectly.
5. The tape deck is connected incorrectly. Double check that the TD262 / TD212's OUT connectors are attached to the TAPE IN sockets on your receiver, etc.
6. The hook-up cables are internally broken. Replace them with new ones.

#### Cassette deck does not record.

1. Erase-prevention tabs are removed from the cassette. Change the tape or cover the holes with adhesive tape.
2. Cassette deck is connected incorrectly to the pre-amp/receiver/etc.
3. Cassette deck INPUT LEVEL control is set to the "0" far left position.
4. The hook-up cables are internally broken. Replace them with new ones.

**Sound is distorted.**

1. Recording INPUT level has been set too high, saturating the tape. Record again with INPUT level set lower (see *Recording a Tape*, page 8).
2. The tape is worn out. Change to a new tape.
3. A Dolby-encoded tape is being reproduced with the NR button left in its OUT (off) position.
4. The BIAS/EQUALIZATION settings do not match the formulation of the tape being played back.
5. The cassette deck tape head is dirty or magnetized. See page 10 for maintenance instructions.

**Sound is muffled with reduced high frequencies.**

1. Incorrect BIAS/EQUALIZATION setting for that particular type of tape.
2. A tape which has not been recorded with Dolby noise reduction encoding is being played back with the NR switch IN (on).
3. Tape head is dirty or magnetized. See tips on maintenance (page 10).



## TD262 Specifications

<b>Tape Speed :</b>	1 7/8"/sec. 4.75cm/sec.
<b>Heads:</b>	2
<b>Record/Play Head Type:</b>	Amorphous
<b>Frequency Response, — 20dB (IHF std):</b>	20Hz — 20kHz $\pm$ 3dB all formulations
<b>Typical Large Signal Response (0dB):</b>	20Hz — 20 kHz $\pm$ 3dB w/Dolby C & metal tape
<b>Wow-and-Flutter (NAB, WRMS):</b>	0.045%
<b>(DIN):</b>	0.07%
<b>Signal-to-Noise Ratio</b>	
Dolby off:	57dB
(CrO <sub>2</sub> ) Dolby B on:	65dB
Dolby C on:	73dB
<b>Total Harmonic Distortion, 1kHz, metal tape, Dolby level:</b>	1.0%
<b>Channel Separation:</b>	45dB
<b>Channel Crosstalk:</b>	70dB
<b>Erase Ratio:</b>	60dB
<b>Bias Frequency:</b>	105kHz
<b>Fast Forward and Rewind Time:</b>	90 sec (C-60)
<b>Peak Reading Meter Range:</b>	— 20dB to + 6dB
<b>Output Level, 0dB, 10k Ohm load:</b>	480mV
<b>Input Sensitivity (0dB)</b>	
Line:	50mV
<b>Input Impedance</b>	
Line:	22k Ohms
<b>Dimensions (w x h x d):</b>	17 <sup>3</sup> / <sub>8</sub> " x 4 <sup>13</sup> / <sub>16</sub> " x 10 <sup>1</sup> / <sub>4</sub> " 443mm x 122mm x 260mm
<b>Weight:</b>	10 lbs/4.5 kg

Feature and specification subject to change without notice.

## TD212 Specifications

<b>Tape Speed :</b>	1 7/8"/sec. 4.75cm/sec.
<b>Heads:</b>	2
<b>Record/Play Head Type:</b>	Hard Permalloy
<b>Frequency Response, — 20dB (IHF std):</b>	20Hz — 20kHz $\pm$ 3dB w/metal tape
<b>Typical Large Signal Response (0dB):</b>	20Hz — 18kHz $\pm$ 3dB w/Dolby C & metal tape
<b>Wow-and-Flutter (NAB, WRMS):</b>	0.05%
<b>(DIN):</b>	0.08%
<b>Signal-to-Noise Ratio</b>	
Dolby off:	57dB
(CrO <sub>2</sub> ) Dolby B on:	65dB
Dolby C on:	73dB
<b>Total Harmonic Distortion, 1kHz, metal tape, Dolby level:</b>	1.0%
<b>Channel Separation:</b>	45dB
<b>Channel Crosstalk:</b>	70dB
<b>Erase Ratio:</b>	60dB
<b>Bias Frequency:</b>	105kHz
<b>Fast Forward and Rewind Time:</b>	90 sec (C-60)
<b>Peak Reading Meter Range:</b>	— 10dB to + 5dB
<b>Output Level, 0dB, 10k Ohm load:</b>	480mV
<b>Input Sensitivity (0dB)</b>	
Line:	50mV
<b>Input Impedance</b>	
Line:	22k Ohms
<b>Dimensions (w x h x d):</b>	17 <sup>3</sup> / <sub>8</sub> " x 4 <sup>13</sup> / <sub>16</sub> " x 9 <sup>1</sup> / <sub>16</sub> " 443mm x 122mm x 230mm
<b>Weight:</b>	8.5 lbs/3.9 kg